

SECTION 15190

MECHANICAL IDENTIFICATION

Pipe markers in this specification comply with the LANL Sign, Label and Tag Catalog (Piping Section). Refer to this catalog for additional pipe markers.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Valve Tags
- B. Pipe Markers - Above Ground
- C. Underground Piping Warning Tape
- D. Ceiling Tacks
- E. Duct Markers
- F. Mechanical Equipment Identification
- G. HVAC Controls Identification
- H. Safety Signs
- I. Fire Hydrants and Isolation Valves Numbering

1.2 DEFINITIONS

- A. Exposed Areas: Finished areas and other areas used by personnel in normal use of building, such as equipment rooms and storage rooms.
- B. Concealed Areas: Duct or pipe tunnels, duct or pipe chases, spaces above accessible ceilings, and crawl spaces.

1.3 SUBMITTALS

- A. Submit the following in accordance with the requirements of Section 01300.
 - 1. Catalog data

PART 2 PRODUCTS

2.1 Manufacturer

- A. W. H. Brady Co. catalog numbers are used as a basis of identification.
- B. Stock catalog numbers are listed in Part 2 and Part 3 schedules. Contractor is responsible to review schedules and furnish markers as identified by Contract Documents. In some instances, "non-stock" markers (special) may be required.

2.2 VALVE TAGS

- A. Metal Tags: No. 23211, brass with stamped letters; tag size minimum 2 1/2 inch diameter with smooth edges.
- B. Beaded Chain: No. 23306, size 6 brass 4 1/2 inch long with locking link.

2.3 PIPE MARKERS/ARROW TAPE ABOVE GROUND

- A. Color: Conform to ANSI A13.1.
- B. Self Sticking Pipe Markers/Arrow Tape: Material B-946, flexible, vinyl film tape with pressure sensitive permanent adhesive backing and printed markings.
 - 1. Suitable for indoor/outdoor application.
 - 2. Temperature range: Minus 40 degrees to 180 degrees F.

2.4 UNDERGROUND PIPING WARNING TAPE

- A. Type: Identoline series, non-detectable.
- B. APWA specifications color coding, continuous printed plastic polyethylene ribbon tape, minimum 6 inches wide by 3.5 mil thick, for direct burial services.
- C. Warning tape wording shall identify type of utility buried, for example, "Caution - Buried Gas Line."
- D. Color code as follows:
 - 1. Yellow Gas Line
 - 2. Blue Water Line
 - 3. Green Sewer Line
 - 4. NOTE: Use yellow warning tape noted "Caution - Pipeline Buried Below" on all other piping.

2.5 CEILING TACKS

- A. No. 23250 series, steel with 7/8 inch diameter color coded head.
- B. Color code as follows:
 - 1. Yellow HVAC equipment
 - 2. Red Fire dampers/smoke dampers
 - 3. Green Plumbing valves
 - 4. Blue Heating/cooling valves

2.6 DUCT MARKERS

- A. Plastic Tape Duct Marker and Arrows: Material No. B-946, flexible vinyl film tape with pressure sensitive permanent adhesive backing and printed markings.
 - 1. Suitable for indoor/outdoor application.
 - 2. Temperature range: Minus 40 degrees to 180 degrees F.
- B. Letter style block, 2 inches height minimum.

2.7 MECHANICAL EQUIPMENT IDENTIFICATION

- A. Identify mechanical equipment, e.g., air handling units, pumps, heat transfer equipment, water

treatment devices, and similar items, with temporary nameplates or tags.

- B. Mark nameplate or tag with equipment code numbers as noted in the Contract Documents.
- C. Permanent nameplates will be furnished and installed by LANL.

2.8 CONTROLS IDENTIFICATION

Identify HVAC automatic controls, instruments, and similar items, in accordance with the Controls Specification Section _____.

2.9 SAFETY SIGNS

- A. Colors associated with specific words, such as "Danger," "Warning," "Caution," or "Notice," shall conform to ANSI Z35.1
- B. Provide signage identifying each fixture, including fume hood cup sinks, being served by non-potable water.

PART 3 EXECUTION

3.0 FIRE HYDRANTS

LANL's Support Services Subcontractor will number fire hydrants and the hydrant isolation valves (valve box lids).

3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.2 INSTALLATION

A. Valve Tags:

1. Install with brass beaded chain.
2. Steel stamp or engrave valve function in accordance with schedule.
3. Letter style block, 1/4 inch height minimum.
4. Tag all valves in concealed or exposed areas except isolation and by-pass valves installed adjacent to the equipment they serve.
5. Provide valve schedule listing valves by numbers, name of service, function of each valve and tag legend. Frame under glass and hang where directed.

B. Pipe Markers Above Ground:

1. Install in accordance with manufacturer's instructions.
2. Seal markers with clear lacquer.
3. Identify all piping in exposed or concealed areas in accordance with schedule.
4. Pipe marker consists of pipe contents identification with flow direction arrow tape. The color scheme shall be consistent, unless otherwise noted.
5. Wrap arrow tape completely around pipe at both ends of pipe markers.

6. Install in clear view and align with axis of piping.
7. Label piping at intervals of not more than 20 feet on horizontal and vertical runs, at each branch connection, and where pipe penetrates walls, ceilings and floors (both sides).
8. Label waste piping below all laboratory sinks to indicate destination.
9. Size of label depends on the outside diameter (OD) of the pipe. The pipe OD includes insulation or protective coating.
10. Minimum length of marker including arrows:

<u>Outside Diameter</u>	<u>Length</u>
2" or smaller	8"
Greater than 2" to less than 8"	12"
8" to 10"	24"
Over 10"	32"

- C. Underground Piping Warning Tape: Install 12 to 18 inches below finished grade, directly above buried pipe.
- D. Ceiling Tacks: Provide ceiling tacks to locate HVAC equipment, valves or dampers above accessible suspended ceilings. Locate tacks in corner of panel closest to equipment.
- E. Duct Markers:
 1. Install in accordance with manufacturer's instructions.
 2. Seal markers with clear lacquer.
 3. Identify ducts in exposed or concealed areas in accordance with the schedule.
 4. Duct markers consist of duct identification name with flow direction arrows. The color scheme shall be consistent.
 5. Install in clear view and align with axis of duct.
 6. Label ducts at intervals of not more than 20 feet on horizontal and vertical runs, at each branch connection, and where duct penetrates walls, ceilings and floors (both sides).
- F. Safety Signs: Install in clear view.

3.3 SCHEDULES

A. Pipe Markers and Valve Tag Legend:

Pipe Identification	Background Color/ Letter Color	Outside Diameter (Letter Height)				Valve Tag Legend
		6" or Greater (3 1/2" high) Style 1HV*	3" to less than 6" (2" high) Style 1*	1" to less than 3" (3/4" high) Style 4*	Less than 1" (5/16" high) Style 3C*	
		Pipe Marker Catalog Numbers				
Acetylene Gas	Yel/Blk	7001				AC
Argon	Grn/Wht	7015				AR
Breathing Air	Grn/Wht	7035				BA
CAM Sample Air	Yel/Blk	Special				CAM
Chemical Feed	Yel/Blk	7043				CHEM
Chemical Liquid Waste	Yel/Blk	Special				CLW
Chemical Liquid Waste Vent	Yel/Blk	Special				CLWV
Chilled Water Return	Grn/Wht	7046				CWR
Chilled Water Supply	Grn/Wht	7047				CWS
Compressed Air	Yel/Blk	7058				CA
Condensate Pump Discharge	Yel/Blk	7064				CPD
Deionized Water/Drain	Grn/Wht	7073/7090				DWD
Deionized Water Return	Grn/Wht	7074				DWR
Deionized Water Supply	Grn/Wht	7075				DWS
Drain	Grn/Wht	7090				D
Drain	Yel/Blk	7091				D
Dry/Vacuum	Yel/Blk	Special/7291				DV
Effluent	Yel/Blk	7095				EF
Fire Protection Water	Red/Wht	7110				FW
Fixed-Head Sample Air	Yel/Blk	Special				FH
Fuel Oil Return	Yel/Blk	7116				FOR
Fuel Oil Supply	Yel/Blk	7117				FOS
Fuel Oil Vent	Yel/Blk	7118				FOV
Halon	Red/Wht	Special				HA
Electric Traced	Yel/Blk	7096				-----
Heating Water Return	Yel/Blk	7129				HWR
Heating Water Supply	Yel/Blk	7130				HWS

Pipe Identification	Background Color/ Letter Color	Outside Diameter (Letter Height)				Valve Tag Legend
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		Pipe Marker Catalog Numbers				
Helium	Grn/Wht	7132				HE
High Pressure Condensate (Above 15 PSIG)	Yel/Blk	7137				HPC
High Pressure Natural Gas (Above 5 PSIG)	Yel/Blk	7139				G
High Pressure Steam (Above 15 PSIG)	Yel/Blk	7141				HPS
Hydrogen	Yel/Blk	7157				H2
Instrument Air	Blue/Wht	7168				IA
Liquid Nitrogen	Yel/Blk	7172				LN
Low Pressure Condensate (15 PSIG or less)	Yel/Blk	7175				LPC
Low Pressure Natural Gas (Less than 14" W.C.)	Yel/Blk	7177				GL
Low Pressure Steam (15 PSIG or less)	Yel/Blk	7179				LPS
Medium Pressure Natural Gas (14" W.C. to 5 PSIG)	Yel/Blk	7190				GM
Nitrogen	Grn/Wht	7198				N
Non-Potable/Cold Water	YelBlk/ GrnWht	7203/7055				NPCW
Non-Potable/Hot Water	Yel/Blk	7203/7146				NPHW
Non-Potable/Make-up Water	Yel/Blk	7203/7182				NPMW
Non-Potable/Hot Water Return	Yel/Blk	7203/7148				NPHWR
Oxygen	Yel/Blk	7209				O2
Potable/Cold Water	Grn/Wht	7217/7055				PCW
Potable/Hot Water (Use Grn/Wht Arrows)	GrnWht/ YelBlk	7217/7143				PHW
Potable/Hot Water Return (Use Grn/Wht Arrows)	GrnWht/ YelBlk	7217/7148				PHWR
Process/Cooling Water Return	Grn/Wht	7224/7071				PCWR

Pipe Identification	Background Color/ Letter Color	Outside Diameter (Letter Height)				Valve Tag Legend
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		Pipe Marker Catalog Numbers				
Process/Cooling Water Supply	Grn/Wht	7224/7072				PCWS
Propane Gas	Yel/Blk	7227				PG
Radioactive Liquid Waste	Yel/Blk	Special				RLW
Radioactive Liquid Waste Vent	Yel/Blk	Special				RLWV
Rainwater	Grn/Wht	7229				RW
Refrigerant Discharge (Hot Gas)	Yel/Blk	7234				RD
Refrigerant Liquid	Yel/Blk	7235				RL
Refrigerant/Relief	Yel/Blk	7235/7239				RR
Refrigerant Suction	Yel/Blk	7236				RS
Sanitary Sewer	Yel/Blk	7251				SS
Sanitary Vent	Yel/Blk	7252				V
Sanitary Waste	Yel/Blk	7253				SW
Storm Drain	Grn/Wht	7273				SD
Sump Pump Discharge	Yel/Blk	7280				SPD
Tower Water/Drain	Grn/Wht	7285/7090				TWD
Tower Water/Return	Grn/Wht	7286				TWR
Tower Water/Supply	Grn/Wht	7287				TWS
Wet/Vacuum	Yel/Blk	Special/7291				WV
Vacuum/Pump Discharge	Yel/Blk	7291/7280				VPD

* Include style number () following (separated by a hyphen) the catalog number.

B. AIR DUCT MARKERS

Duct Identification	Background Color/ Letter Color	Catalog Number
Air Return	Blu/Wht	7008
Air Supply	Blu/Wht	7010
HEPA Exhaust Air	Yel/Blk	Special/7098/7005
Lab Exhaust Air	Blu/Wht	Special/7100
Mixed Air	Blu/Blk	Special/7006
Outside Air	Blu/Wht	7206
Perchloric Exhaust Air	Yel/Blk	Special/7098/7005
Relief Air	Blu/Wht	7240
Toilet Exhaust Air	Blu/Wht	Special/7100
Vacuum Exhaust Air	Yel/Blk	7291/7098/7005

C. SAFETY SIGNS

LOCATION	WORDING	SIZE/CATALOG NUMBER
Each fixture served by non-potable water	NOTICE Non-Potable Water not to be used for drinking, washing or cooking purposes	7 X 10/40925
First steam valve inside the building.	CAUTION Only utilities is authorized to operate this valve. Call 7-4842 to schedule valve operation.	Special order. Yellow background color/black lettering. Size 5 x 10 (min.), aluminum.

END OF SECTION